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Northeastern Area
State & Private Forestry
DIVISION OF FOREST PEST CONTROL

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OAK DEFOLIATION ON THE HURON NATIONAL FOREST

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INTRODUCTION

Oak defoliation in northern Lower Michigan is relatively common. Usually, the defoliation is caused by late spring frosts. Occasionally, outbreaks of leafrollers occur. When the defoliation occurs for a number of years in succession, tree mortality occurs. The aerial surveys are made to determine the extent and severity of defoliation and to record tree mortality.

METHODS

An aerial survey was flown on July 8, 1969, to map the oak defoliation. The flights were in Forest Service Aerocommander at about 1000 ft. above ground; 100-140 mph; and in east-west lines, 4 miles apart. Observations were sketch-mapped on 1/2 inch to mile map. The following classes of defoliation were recorded:

none to light - no defoliation visible from the air; less than 50% defoliation
moderate - some defoliation visible, but the crown canopy is green; defoliation 50%-80%
severe - foliage barely visible; general hue of stand purplish to gray; defoliation greater than 80%
tree mortality - no foliage visible; general color of stand gray; these areas were mapped on the basis of where mortality is occurring, rather than requiring a given percent of dead trees.

Ground information was collected either before or after the aerial flights, depending on the area. All classifications of damage are qualitative. The mapping unit is 1 sq. mile (a section), and it indicates that the oak within the area is affected.

RESULTS

All the oak stands (Quercus ellipsoidalis) had some defoliation. Consequently, the map below shows only the moderately and severely defoliated stands. Most of the areas classed as having tree mortality had more than 10% of oak apparently dead.

The defoliation in 1969 was caused by both late spring frost and an oak leafroller. Frost defoliation is concentrated more in the lower crown, while insect defoliation predominates in the upper crown. Oak stands east of Hwy 33 have more insect damage, while frost appears more severe westward. The insect has been identified as Fruit-tree Leafroller, Archips argyrospilus, however, recent indications are that it may be a Leaf Tier, Archips semiferanus. Identification studies are in progress.

RECOMMENDATION

If the defoliation and possible oak mortality poses a threat to timber, recreation or wildlife, this Office should be requested to make a more complete biological evaluation.